

**STUDY REGARDING FREQUENCY OF H. PYLORI INFECTION IN CHILDREN  
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**ABSTRACT**

**Objective:** To determine the frequency of helicobacter pylori among children presenting with recurrent abdominal pain. **Study Design:** Descriptive / Cross-sectional study. **Study and Duration of Study:** This study was conducted in the in the Department of Pediatrics, Jinnah hospital Lahore from August 2016 to January 2017. **Materials and Methods:** Sample size was 177 using 8% proportion of H.Pylori among children with Recurrent Abdominal Pain. **Results:** The mean age group of our sample was  $11.29 \pm 2.74$  years of which 75.1% were male and 24.9% were female children. Most of the sampled children were in the age group between 8-16 years. The mean duration of abdominal pain was  $4.86 \pm 1.14$  months. On ELISA, H. Pylori was detected in 24.9% of patients. **Conclusion:** H. Pylori is quite common in our pediatric population presenting with recurrent abdominal pain. It is a serious calamity in children and we recommend more research to find out risk factors related to this high burden of H. Pylori.

**KEYWORDS:** ELISA, Helicobacter Pylori, Recurrent abdominal pain.**INTRODUCTION**

Many children seek medical advice for Recurrent Abdominal Pain. Recurrent Abdominal Pain hinders the daily activities of 4% to 25% of school going children. It seems to be a benign problem, but morbidities associated with RAP include poor school attendance, hospital admission and laparotomies, symptoms sometimes continue to adulthood.<sup>[1,2]</sup> Social withdrawal, poor physical abilities, school absentees occur in 10% to 15% of school children due to recurrent abdominal pain on regular basis that result in increased health care visits and has poor effect on child's well being.<sup>[3,4]</sup> The burden of disease is under scored as 1 out of 3 experience chronic abdominal pain for minimum of 5 years.<sup>[5]</sup> Irritable bowel syndrome, a functional gastro-intestinal disorder is one of adulthood complication of childhood RAP.<sup>[6]</sup> Acidic environment of stomach is site for growth of H.Pylori, a pathogenic Gram-negative spiral bacillus. It is a leading cause of chronic gastritis, peptic ulcers, non-ulcer dyspepsia, gastric adenocarcinoma and mucosa-associated lymphoid tissue (MALT) lymphoma. 50% of the total world population is infected with H. pylori according one estimate. Developing World currently is on hit list of H.pylori.<sup>[7]</sup> Longstanding exposure to H. pylori is usually asymptomatic but can lead to chronic gastritis in children and sometimes peptic ulcer disease is linked to it.<sup>[8]</sup> Epigastric pain was

considered as red flag symptom in one study, H pylori and abdominal pain were found to have significant associations in pediatric patients.<sup>[9]</sup> No causal relationships between abdominal pain and H. pylori infection have been found in other studies.<sup>[10]</sup> In 65% of Turkish children presenting with recurrent abdominal pain and dyspepsia H. Pylori infection was the cause.<sup>[11]</sup> The prevalence of H.Pylori children infection with recurrent pain abdomen was 8.0% (70/873) as observed in another study.<sup>[8]</sup>

The present study is designed to determine the frequency of H.Pylori among children presenting with recurrent abdominal pain. H.Pylori is not uncommon in our population and as mentioned above, the literature suggested variations in its prevalence rates from region to region. Moreover, few studies suggested an association between H.Pylori and recurrent abdominal pain among children while other studies failed to do so. In this study, we will determine its frequency among local children presenting with RAP. The results of this study will give us local magnitude of the problem and will be shared with other local pediatricians and gastroenterologists to develop future research strategies.

## MATERIALS AND METHODS

This descriptive cross sectional study was conducted in Pediatric Department Jinnah hospital Lahore. The study was conducted over the period of 6 months. Sample size was 177 using 8% proportion of H. Pylori among children with Recurrent Abdominal Pain (RAP), with 95% confidence interval and 4% margin of error using WHO formula for sample size estimation. Children of both genders, age 5 – 16 years, who presented with RAP for at least 3 months were enrolled. Children with previous diagnosis or who received treatment for H. Pylori and those with history of intake of PPI in last 2 week were not enrolled in the study. Date Collection Procedure: Hospitals research and ethical board approved the study to be conducted. All the subjects fulfilling inclusion criteria (recurrent abdominal pain according to Rome II criteria) were enrolled in the study through OPD department. The aims and importance of the study was explained to the parents and a written informed consent was obtained. History and examination were carried out in all the children. Five milliliter of blood was drawn under strict aseptic technique and was sent to hospital laboratory for detection of H pylori using ELISA method. All the investigations were done from hospital laboratory by single expert pathologist.

**Data Analysis Procedure:** All the data was stored and analyzed on SPSS version 14. Mean  $\pm$  SD was calculated for quantitative variables like age and duration of abdominal pain. Frequencies and percentages were calculated for categorical variables like sex and H pylori. H pylori were stratified with age and gender to observe the effect modifications. Post stratification was

performed using chi-square test keeping a p-value  $\leq$  0.05.

## RESULTS

A total of 177 children presenting with recurrent abdominal pain were enrolled in the study. The mean age of the sample was  $11.29 \pm 2.74$  years. The range of age in our study was 9.5 years with minimum age of 6.5 years and maximum age of 16.00 years. On grouping the sample in different age groups, we observed that 15.3% of patients were in the age group between 5.00 to 8.00 years, 39% were in the age group 8.01 to 12.00 years and 45.8% of patients were in the age group 12.01 to 16.00 years.

While distributing the patients with regards to gender, we observed that in our study 75.1% of the samples were male and 24.9% were female gender. (Table 1) The mean duration of abdominal pain in our sample was  $4.86 \pm 1.14$  months. From all the children, a 5cc of blood was drawn under strict aseptic technique and sent to hospital laboratory for detection of H pylori using ELISA method. On report, H. Pylori was detected in 24.9% of children (Table 2).

While we stratified H. Pylori with regards to age groups, we obtained a statistically insignificant difference using chi square test with and a p-value of 0.511 (Table 3).

While we stratified H. Pylori with regards to gender, we observed that the difference was statistically significant when we applied chi square test and p value of 0.015 (Table 4).

**Table 1: Gender-wise distribution of sample (n=177).**

Gender		Frequency	Percent
	Male	133	75.1
	Female	44	24.9
	Total	177	100.0

**Table 2: Frequency of helicobacter pylori (n=177).**

H. Pylori		Frequency	Percent
	Yes	44	24.9
	No	133	75.1
	Total	177	100.0

**Table 3: Age group wise stratification of H Pylori (n=177).**

			H. Pylori		Total
			Yes	No	
Age Groups	5.00 to 8.00 years	Count	9	18	27
		% within Age Groups	33.3%	66.7%	100.0%
	8.01 to 12.00 years	Count	17	52	69
		% within Age Groups	24.6%	75.4%	100.0%
	12.01 to 16.00 years	Count	18	63	81
		% within Age	22.2%	77.8%	100.0%

	Groups			
Total	Count	44	133	177
	% within Age Groups	24.9%	75.1%	100.0%

**Table 4: Gender group wise stratification of H. Pylori (n=177).**

			H. Pylori		Total
			Yes	No	
Gender of the Children	Male	Count	27	106	133
		% within Gender of the Children	20.3%	79.7%	100.0%
	Female	Count	17	27	44
		% within Gender of the Children	38.6%	61.4%	100.0%
Total		Count	44	133	177
		% within Gender of the Children	24.9%	75.1%	100.0%

## DISCUSSION

In general practice at Netherlands, 5% of childhood consultations were for abdomen pain,<sup>[12]</sup> while 2% to 4% consultation occurred in studies performed in Austria and the United States,<sup>[13]</sup> Label of Functional abdominal pain is given to undiagnosed medical cases. Poor physical and mental activity, as well as disturbed social life and school failure due to repeated return of abdomen pain found in 10% to 15% of school subjects, resulted in frequent health care visits.<sup>[3,4]</sup> This problem is underestimated as one out of three children suffer from tummy pain for at least 5 years.<sup>5</sup> Irritable Bowel Syndrome in adults is considered to be continuation of functional gastrointestinal disorders in childhood.<sup>[6,14]</sup> Few factors have been identified to predict weather childhood functional abdominal pain, interferes with wellbeing of victims, as it persists for years. Recently, functional gastrointestinal disorders in young adulthood have been associated with higher level of no gastrointestinal symptoms.<sup>[4,14]</sup> Children with Functional abdominal pain having somatic symptoms in addition to abdominal pain can be used as clinical marker for prediction of poor outcome. Subjects with long term persistence of abdominal pain can be correlated to parents, if they also have gastrointestinal symptoms. In the light of these facts family physician can identify those subjects who are at risk for long term abdomen pain. They can plan more appropriate management strategies before any sequel, such as strict follow up or consulting other health care colleagues if required. H. Pylori is the most common pathogen in children worldwide,<sup>[16]</sup> it is gram negative bacterium present in more than 50% of the world population, most of the infected children remain asymptomatic, although chronic gastritis and peptic ulcer occurred due to prolong exposure to H. Pylori infection. H. Pylori prevalence varies with age, region and race. Increase in age is associated with increase prevalence of H. Pylori infection. Socioeconomic status modifies its prevalence as its frequency is variable in developed and developing countries.

In addition to socioeconomic factor personal hygiene and other member in the family being infected are consider to be important factors in determining the frequency of H. Pylori infection in childhood.<sup>[17]</sup>

Transmission of H. Pylori infection occurs from person to person and even within families.<sup>[18]</sup>

A study was conducted in 2005 on 15,916 healthy people who had age above 16years. Those who were in 20s prevalence of H. Pylori was 29.3%, those in their 30s, their prevalence was 49.1%, 57.8% in those who were in 40s, 61.5% for those in their 50s this shows increase prevalence with increase in age.<sup>[19]</sup> Our data is comparable to other developing countries, studies performed in Republic of Benin<sup>20</sup>, Egypt,<sup>[21]</sup> India,<sup>[22]</sup> and reported from other Pakistani<sup>23</sup> studies, had similar results as ours. 7% to 15% prevalence of Pylori infection among pediatric age group has been reported in New Zealand<sup>24</sup>, Germany,<sup>[25]</sup> and the United States,<sup>[26]</sup> The major reasons for difference in prevalence of H. Pylori infection among children in developed and developing countries are due to low socioeconomic status, poor environmental and living condition.<sup>[20,21]</sup> Literature has reported low socioeconomic class to be at high risk for H. Pylori infection,<sup>[27]</sup> Children belonging to low income group have poor living condition and sanitary habits thus predisposing them to H. Pylori infection; but this is not always true as other sources of infection that are independent of social class also exists. Controversial reports have been generated regarding association between H. Pylori infection and recurrent abdominal pain. No links between H. Pylori infection and recurrent abdominal pain have been proven from India,<sup>[28]</sup> and Sweden.<sup>[29]</sup> Similarly no association between H. Pylori and recurrent abdomen pain has been shown in many reviews and Meta-analysis.<sup>[30]</sup> In our study we found that children with recurrent abdominal pain had prevalence of H. Pylori infection. Studies from Saudi Arabia,<sup>[31]</sup> and the United States,<sup>[32]</sup> are comparable to our studies.

Helminthiasis is common cause of recurrent abdomen pain in children in our society especially in low socio-economic class. It is common practice for General Physician and parents to administering anthelmintic to children with recurrent abdominal pain. Our study suggested additional role of *H. Pylori* in recurrent abdominal pain. These finding require additional interventional study in large population of children to document role of *H. Pylori* in recurrent abdomen pain. Subjects included in the study were recruited from hospital which was major limitation which was difficult to generalize our result as subject from general pediatric population were excluded. It is very difficult to find subject from general pediatric population for research purpose as they do not give assent or consent for blood sampling. Community base study on *H. Pylori* in our population has limitation because of this reason. In developing countries research test such is urea breath test or fecal antigen test as they are acceptable to the community are recommended.

## CONCLUSION

Recurrent abdominal pain due to *H. Pylori* is common in our pediatric population. Therefore further research to explore risk factors for *H. Pylori* infection is recommended. This will reduce the burden of *H. Pylori* and associated morbidities. Conflict of Interest: The study has no conflict of interest to declare by any author.

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